TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID : **CP-RW-2019-04-11-28** **Date: 31-01-19**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural 562135

Customer Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 28-01-19

Type of Mix : BC(Bitumenous Concrete)

Date of test : 28-01-19

Type of Binder : 60/70

% of Binder Used : 5.0%

Weight of Aggregate : 200.0 gm

Weight of Binder : 10.0 gm

Temperature of water bath : 40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.5	1.5	98.3	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

Lab ID : **CP-RW-2019-04-11-28** **Date: 31-01-19**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayana Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural 562135

Customer Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 28-01-19

Type of Mix : BC (Bituminous Concrete)

Date of test : 28-01-19

Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.4	Combined Flakiness & Elongation Index for BC is Maximum 35%	IS:2386 Part I
	Elongation Index	11.8		
Strength	Aggregate Impact Value	22.1	Maximum 24%	IS:2386 Part IV
Specific gravity	Specific gravity	2.68	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.21	Maximum 2%	IS:2386 Part III

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TESTS RESULTS ON STABILITY OF MIX

Lab ID : **CP-RW-2019-04-11-28** **Date: 31-01-19**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural 562135

Customer Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 28-01-19

Type of Mix : BC (Bituminous Concrete)

Date of test : 28-01-19

The results of the tests conducted on the Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.14	11.13	10KN(min)
2	Marshal flow at 60°C, mm	3.52	3.51	2-4
3	Percent air Voids	4.82	4.83	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.28	14.26	13-15
5	Percent Voids filled with Bitumen(VFB %)	71.87	71.63	65-75
6	Density, g/cc	2.25	2.26	–

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ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-24

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID : **CP-RW-2019-04-11-28** **Date: 06-02-19**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural 562135

Customer Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 04-02-19

Type of Mix : BC (Bituminous Concrete)

Date of test : 04-02-19

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	470	469
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	6.00	6.20
4	Average percentage	%	6.1	

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Lab ID : **CP-RW-2019-04-11-28** **Date: 06-02-19**

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 470

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.9	99.1	90-100
9.5	62	66	14.0	86.0	70-88
4.75	112	178	37.9	62.1	53-71
2.36	88	266	56.6	43.4	42-58
1.18	29	295	62.8	37.2	34-48
0.6	11	306	65.1	34.9	26-38
0.3	46	352	74.9	25.1	18-28
0.15	45	397	84.5	15.5	12-20
0.075	50	447	95.1	4.9	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 469

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	4	4	0.9	99.1	90-100
9.5	62	66	14.1	85.9	70-88
4.75	112	178	38.0	62.0	53-71
2.36	88	266	56.7	43.3	42-58
1.18	29	295	62.9	37.1	34-48
0.6	11	306	65.2	34.8	26-38
0.3	46	352	75.1	24.9	18-28
0.15	45	397	84.6	15.4	12-20
0.075	52	449	95.7	4.3	4-10

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2019-04-11-28** **Date: 14/01/2019**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural-562135.

Customer's Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 09-01-19

Customer ID : Cement Concrete Pavement

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 14/01/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Cement Concrete Pavement	M20	07/01/2019	14/01/2019	150.27 X 150.16 X 151.56	22564	**8.951**	412.3	18.3	18.6
2	Cement Concrete Pavement	M20	07/01/2019	14/01/2019	151.40 X 150.81 X 151.25	22832	**8.837**	424.8	18.6	
3	Cement Concrete Pavement	M20	07/01/2019	14/01/2019	150.62 X 151.11 X 149.73	22760	**8.412**	430.4	18.9	

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2019-04-11-28** **Date: 04/02/2019**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural-562135.

Customer's Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 09-01-19

Customer ID : Cement Concrete Pavement

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 28 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 04/02/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Cement Concrete Pavement	M20	07/01/2019	04/02/2019	149.14 X 151.18 X 149.17	22547	**8.441**	530.2	23.5	23.2
2	Cement Concrete Pavement	M20	07/01/2019	04/02/2019	151.27 X 149.74 X 151.02	22650	**8.918**	507.7	22.4	
3	Cement Concrete Pavement	M20	07/01/2019	04/02/2019	151.50 X 150.87 X 151.38	22857	**8.229**	537.8	23.5	

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TEST RESULTS OF GRADATION FOR GSB
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID : **CP-RW-2019-04-11-28** **Date: 19-01-19**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural 562135

Customer Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 16-01-19

Type of Mix : GSB (Granular Sub Base)

Date of test : 16-01-19

Oven Dry Weight : 10000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec. Limit Vide Table 400.1 MORTH Specification
75	0	0	0	100	100
53	997	997	9.97	90.03	80-100
26.5	1685	2682	26.82	73.18	55-90
9.5	1292	3974	39.74	60.26	35-65
4.75	1490	5464	54.64	45.36	25-55
2.36	1764	7228	72.28	27.72	20-40
0.425	1666	8894	88.94	11.06	10-25
0.075	1106	10000	100.00	0.00	0-5

TESTS ON FILLER SCREEN MATERIALS

Sl no	Particulars	Test results	Spec.Limit Vide Table
1	Liquid Limit, %	21.33%	Maximum 25
2	Plasticity index, %	Non plastic	Maximum 6

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TEST RESULTS OF GRADATION FOR WMM

Lab ID : **CP-RW-2019-04-11-28** **Date: 23-01-19**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural 562135

Customer Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 21-01-19

Type of Mix : WMM (Wet Mix Macadam)

Date of test : 21-01-19

Oven Dry Weight : 11000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	315	315	2.9	97.1	95-100
22.4	2259	2574	23.4	76.6	60-80
11.2	2179	4753	43.2	56.8	40-60
4.75	2251	7004	63.7	36.3	25-40
2.36	1621	8625	78.4	21.6	15-30
0.6	623	9248	84.1	15.9	8-22
0.075	1338	10586	96.2	3.8	0-5

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TEST REPORT OF AGGEGRATE IMPACT VALUE
IS: 2386 Part IV

Lab ID : **CP-RW-2019-04-11-28** **Date: 23-01-19**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural 562135

Customer Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 21-01-19

Type of Mix : Coarse Aggregate for WMM (Wet Mix Macadam)

Date of test : 21-01-19

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	300.2	300.2
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	73.9	74.0
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	225.9	225.8
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.4	0.4
5	Aggregate impact value	(B/A)*100	24.6	24.7
6	Aggregate impact value (Mean of two tests)	Pecentage	24.6	

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DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2019-04-11-28** **Date: 23-01-19**
Project Name	:	Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.
Name of Work	:	Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.
Agency	:	Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural 562135
Customer Reference	:	BBMP/EE/BTP/WO/61/2018-19
Date of Receipt	:	21-01-19
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test	:	21-01-19

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	12.8%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	12.5%	
Combined Flakiness and Elongation Index for WMM	25.3%	

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TEST REPORT ON BITUMEN

Lab ID : **CP-RW-2019-04-11-28** **Date: 25-01-19**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural 562135

Customer's Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 24-01-19

Sample Type : Bitumen

Reference to BIS codes : IS: 1201-1220(1978) (Reaffirmed-2004)

Date of test : 24-01-19

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	**62**	60 to 70
2	Softening Point, °C	**51.4**	Min. 40°C
3	Ductility, cm	**97**	Min. 75cm
4	Flash point, °C	**244**	Min. 220°C
	Fire point, °C	**274**	

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TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2019-04-11-28**	**Date: 30-01-19**
Project Name	:	Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.	
Name of Work	:	Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.	
Agency	:	Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural 562135	
Customer Reference	:	BBMP/EE/BTP/WO/61/2018-19	
Date of Receipt	:	28-01-19	
Type of Mix	:	BC-Plant (Bituminous Concrete)	
Date of test	:	28-01-19	
Oven Dry Weight	:	5000	Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-17(grading-2)
19	0	0	0.0	100.0	100
13.2	89	89	1.8	98.2	90-100
9.5	702	791	15.8	84.2	70-88
4.75	895	1686	33.7	66.3	53-71
2.36	587	2273	45.5	54.5	42-58
1.18	492	2765	55.3	44.7	34-48
0.6	503	3268	65.4	34.6	26-38
0.3	528	3796	75.9	24.1	18-28
0.15	458	4254	85.1	14.9	12-20
0.075	350	4604	92.1	7.9	4-10
PAN	396	5000	100	0.0	0

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ದ್ಯಾವರಾಯನಪುರ ಉಪ ವಿಭಾಗ
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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2019-04-11-28** **Date: 14/01/2019**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural-562135.

Customer's Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 09-01-19

Customer ID : Cement Concrete Pavement

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 14/01/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Cement Concrete Pavement	M20	07/01/2019	14/01/2019	151.59 X 149.03 X 150.77	22591	**8.951**	425.9	18.9	18.6
2	Cement Concrete Pavement	M20	07/01/2019	14/01/2019	151.90 X 151.16 X 150.36	22961	**8.837**	416.3	18.1	
3	Cement Concrete Pavement	M20	07/01/2019	14/01/2019	151.39 X 149.64 X 149.14	22654	**8.412**	424.2	18.7	

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2019-04-11-28** **Date: 04/02/2019**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural-562135.

Customer's Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 09-01-19

Customer ID : Cement Concrete Pavement

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 28 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 04/02/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Cement Concrete Pavement	M20	07/01/2019	04/02/2019	150.95 X 149.14 X 151.61	22513	**8.441**	534.9	23.8	23.4
2	Cement Concrete Pavement	M20	07/01/2019	04/02/2019	149.47 X 150.96 X 150.24	22563	**8.918**	518.2	23.0	
3	Cement Concrete Pavement	M20	07/01/2019	04/02/2019	150.07 X 150.05 X 151.34	22518	**8.229**	529.2	23.5	

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2019-04-11-28** **Date: 14/01/2019**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural-562135.

Customer's Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 09-01-19

Customer ID : Cement Concrete Pavement

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 14/01/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Cement Concrete Pavement	M20	07/01/2019	14/01/2019	151.13 X 150.50 X 151.52	22745	**8.951**	431.1	19.0	18.7
2	Cement Concrete Pavement	M20	07/01/2019	14/01/2019	149.92 X 149.85 X 150.16	22466	**8.837**	424.4	18.9	
3	Cement Concrete Pavement	M20	07/01/2019	14/01/2019	150.24 X 151.66 X 150.79	22785	**8.412**	413.3	18.1	

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2019-04-11-28** **Date: 04/02/2019**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural-562135.

Customer's Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 09-01-19

Customer ID : Cement Concrete Pavement

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 28 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 04/02/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Cement Concrete Pavement	M20	07/01/2019	04/02/2019	149.41 X 150.34 X 149.36	22462	**8.441**	522.1	23.2	23.3
2	Cement Concrete Pavement	M20	07/01/2019	04/02/2019	151.13 X 149.07 X 149.31	22529	**8.918**	513.7	22.8	
3	Cement Concrete Pavement	M20	07/01/2019	04/02/2019	149.70 X 151.70 X 151.07	22710	**8.229**	540.4	23.8	

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2019-04-11-28** **Date: 14/01/2019**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural-562135.

Customer's Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 09-01-19

Customer ID : Cement Concrete Pavement

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 7 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 14/01/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Cement Concrete Pavement	M20	07/01/2019	14/01/2019	149.50 X 151.27 X 150.34	22615	**8.951**	416.5	18.4	18.2
2	Cement Concrete Pavement	M20	07/01/2019	14/01/2019	150.09 X 149.59 X 151.63	22453	**8.837**	405.7	18.1	
3	Cement Concrete Pavement	M20	07/01/2019	14/01/2019	150.93 X 149.86 X 151.84	22619	**8.412**	409.4	18.1	

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID : **CP-2019-04-11-28** **Date: 04/02/2019**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural-562135.

Customer's Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 09-01-19

Customer ID : Cement Concrete Pavement

Sample Type /Size : 150X150X150 mm

Sample grade/Age : M20 / 28 Days Compressive Strength

Reference to BIS codes : IS: 516 - 1959 Methods of Tests for Strength of Concrete Cl.5

Date of test : 04/02/2019

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	Cement Concrete Pavement	M20	07/01/2019	04/02/2019	150.33 X 150.33 X 149.91	22600	**8.441**	528.0	23.4	23.1
2	Cement Concrete Pavement	M20	07/01/2019	04/02/2019	150.07 X 151.59 X 149.05	22749	**8.918**	512.6	22.5	
3	Cement Concrete Pavement	M20	07/01/2019	04/02/2019	149.62 X 150.50 X 149.05	22518	**8.229**	529.5	23.5	

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TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2019-04-11-28** **Date: 29-12-18**
Project Name	:	Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.
Name of Work	:	Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.
Agency	:	Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural-562135.
Customer's Reference	:	BBMP/EE/BTP/WO/61/2018-19
Date of Receipt	:	26-12-18
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 (Part 1,2 3,4,5, 6,11):1988 IS 4031 Part 1 DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4 IS 4031 Part 2, Determination of Fineness by Blaine Air Permeability Method, Clause 5 IS 4031 Part 3, Determination of Soundness, Clause 5,Clause 6 IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 5, Determination of Initial & Final Setting Time, Clause 5 IS 4031 Part 11,DETERMINATION OF DENSITY , Clause 6
Date of test	:	27-12-18
Environmental Conditions during test	:	Temperature: 26°C Humidity: 72%

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	Fineness by dry sieving (%)	2.55	_
2	Finess by Air permeablity method (m^2/kg,Min)	287.5	225m^2/kg, Min
3	Density (gm/cc)	3.12	_
4	Standard Consistency (%)	28.5%	Not specified
5	Initial Setting time	155 minutes	Not less than 30 minutes
6	Final Setting time	260 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	2mm	Not more than 10 mm

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TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2019-04-11-28** **Date: 24-01-19**
Project Name	:	Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.
Name of Work	:	Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.
Agency	:	Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural-562135.
Customer's Reference	:	BBMP/EE/BTP/WO/61/2018-19
Date of Receipt	:	26-12-18
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 12269 : 2013, 53 Grade Ordinary Portland cement Specification , IS 4031 Part 4, Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 6, Determination of Compressive Strength, Clause 6
Date of test	:	27-12-18
Environmental Conditions during test	:	Temperature: 26˚C Humidity: 72%

Compressive Strength

Sl.No.	Physical properties	Results	Requirement as per IS 12269: 2013
1	3 Days	28.5N/mm^2	Not less than 27 N/mm^2
2	7 Days	38.0N/mm^2	Not less than 37 N/mm^2
3	28 Days	56.5N/mm^2	Not less than 53 N/mm^2

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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2019-04-11-28** **Date: 29-12-18**
Project Name	:	Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.
Name of Work	:	Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.
Agency	:	Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural-562135.
Customer's Reference	:	BBMP/EE/BTP/WO/61/2018-19
Date of Receipt	:	26-12-18
Sample Type	:	40mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	26-12-18

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	80 mm	0	0	0.0	100	100
2	40 mm	423	423	2.8	97.2	90-100
3	20 mm	5852	6275	41.8	58.2	30-70
4	10 mm	4232	10507	70.0	30.0	10-35
5	4.75 mm	4225	14732	98.2	1.8	0-5
6	Pan	268	15000	100.0	0	---

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2019-04-11-28** **Date: 29-12-18**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	12.3	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	11.5	
3	Specific Gravity	2.68	–
4	Bulk Density(Loose) (Kg/l)	1.5	–
5	Bulk Density(Compacted) (Kg/l)	1.52	–
6	Water Absorption(%)	0.21	–

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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2019-04-11-28** **Date: 28-12-18**
Project Name	:	Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.
Name of Work	:	Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.
Agency	:	Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural-562135.
Customer Reference	:	BBMP/EE/BTP/WO/61/2018-19
Date of Receipt	:	26-12-18
Sample Type/ Size	:	20mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2011 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	26-12-18

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

Total weight taken : 5000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	40 mm	0	0	0	100	100
2	20 mm	255	255	5.1	94.9	90-100
3	10 mm	2789	3044	60.9	39.1	25-55
4	4.75 mm	1545	4589	91.8	8.2	0-10
5	Pan	411	5000	100	0	_

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2019-04-11-28** **Date: 28-12-18**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	13.2	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	12.4	
3	Specific Gravity	2.65	–
4	Bulk Density(Loose) (Kg/l)	1.51	–
5	Bulk Density(Compacted) (Kg/l)	1.55	–
6	Water Absorption(%)	0.22	–
7	Aggregate crushing Value(%)	24.1	Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface.
8	Aggregate Impact Value(%)	23.8	30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface.

FOR CIVIL Pro.

R KARTHIK RECHAN
Authorized Signature
Quality Manager

CIVIL Pro Sig..... Date..... BANGALORE

End of Report

Format No: CP/TF/01

TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2019-04-11-28** **Date: 28-12-18**

Project Name : Package 1, Includes 3 Works of Rs.200.00 Lakhs 1) Improvements to Road and Drain at Sadiq Layout (Defence Layout) in Ward No. 06 Byatarayanapura Sub Division. 2) Improvements to Roads and Drains at Manjunathnagara in Ward No. 06 Byatarayanapura Sub Division. 3)Improvements of Drains and RCC Culverts at Hegadenagar 9th Cross to 13th Cross in Ward No 06 Byatarayanapura Sub Division.

Name of Work : Improvements to Roads and Drains at Manjunathnagara in Ward No.06 Byatarayanapura Sub Division.

Agency : Sri.M.Venkatesh Chikkanahalli Vijayapura Bangalore Rural-562135.

Customer's Reference : BBMP/EE/BTP/WO/61/2018-19

Date of Receipt : 26-12-18

Sample Type : Fine Aggregate

Reference to BIS codes : IS 383 : 2016 (Specification for Coarse and fine Aggregates)
IS: 2386 :1963(Part - 1, 3) RA2012
IS 2386 Part 1: Particle Size and Shape
IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption

Date of test : 26-12-18

Total weight taken : 1000 grams

Sl.no	Sieve Size	Weight Retained (gms)	Cumulative Weight Retained (gms)	% Cumulative Weight Retained	% Passing	Requirement as per IS 383:2016			
						Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV
1	10 mm	0	0	0.0	100.0	100	100	100	100
2	4.75 mm	27	27	2.7	97.3	90-100	90-100	90-100	95-100
3	2.36 mm	55	82	8.2	91.8	60-95	75-100	85-100	95-100
4	1.18 mm	239	321	32.1	67.9	30-70	55-90	75-100	90-100
5	600 micron	205	526	52.6	47.4	15-34	35-59	60-79	80-100
6	300 micron	203	729	72.9	27.1	5-20	8-30	12-40	15-50
7	150 micron	191	920	92.0	8.0	0-10	0-10	0-10	0-15
8	Pan	80	1000	100.0	0.0	---	---	---	---

Result :The tested Sample Conforms to Grading Zone II

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CIVIL PRO Sig..... Date..... BANGALORE

TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2019-04-11-28** **Date: 28-12-18**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS 383:2016
1	Water Absorption(%)	1.5	–
2	Specific Gravity	2.59	–
3	Material finer than 75 micron(%)	6.9	Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10%

FOR CIVIL Pro.

R KARTHIK RECHAN
Authorized Signatory
Quality Manager

CIVIL PRO Sig..... Date..... BANGALORE

****End of Report****

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